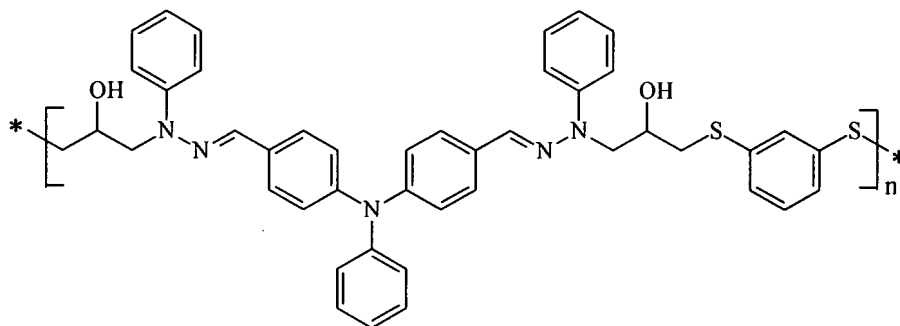


REMARKS

Claims 1-43 are pending in the application, and claims 1-22 and 36-43 are withdrawn from consideration. Claims 23-35 stand rejected, and claims 1, 9, 16, 23, 28 and 36 are amended. Support for the amendments can be found throughout the application and, for example, at page 5, lines 3-29; page 24, line 22-page 26, line 5; and in compounds (2) – (5) on pages 25-26.

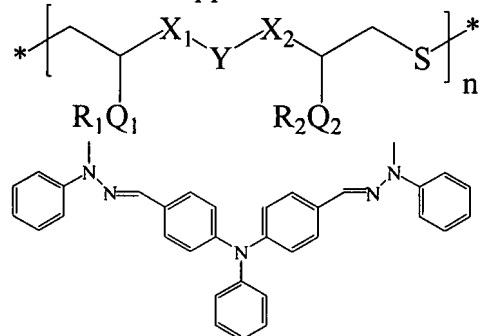
Applicants elected Group I consisting of claims 23-35, without traverse. Applicant also selected chemical structure (4) in response to the Examiner's request for a species election. The structure of chemical structure (4) is represented by the following formula:



Provisional Double Patenting Rejection Over Application No. 10/883,453 (Published Application No. 2006/0003241)

The Examiner provisionally rejected claims 23-35 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over provisionally allowed claims 1-6 of copending application No. 10/883,453 ("the '453 application") (Published Application No. 2006/0003241). The Examiner asserted that the claims are not patentably distinct from each other because they appear to comprise overlapping subject matter. The Examiner asserted that

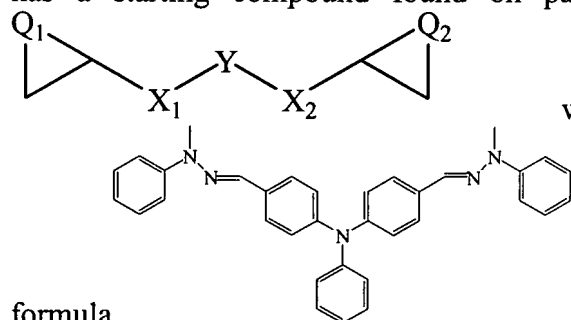
the '453 application sets forth a charge transport material with the formula



where Y has the formula

and X_1 and X_2 are $-(CH_2)_m-$ groups, when R_2 and R_1 are

hydrogen atoms and Q_1 and Q_2 are oxygen atoms, and the formula appears to be the elected species as well as reading on instant claims 23-25 and 27. Further, the Examiner asserted that the co-pending claims 29-34 of the '453 application set forth the method for making the material of co-pending claims 1-6, which appear to read on instant claims 23-25. The asserted method has a starting compound found on page 5 of the '453 application with the formula



wherein Y is an arylamine or the

formula

, and X_1 and X_2 , each independently, is a linking

group, such as a $-(CH_2)_m-$ group, R_1 and R_2 are chosen to be hydrogen atoms, and Q_1 and Q_2 , each independently, is an oxygen atom. The Examiner asserted that the method appears to disclose applicants' species and the '453 structure reads on instant claims 28-35. The Examiner further asserted that the compound of instant claim 28 can be seen in the '453 application in claim 35; the thioacetimide. Further, the Examiner asserted that one of ordinary skill in the art could have obtained/made/used the polymeric charge transport material of instant claims 23-35 from the '453 application. The rejection of claims 23-35 on the ground of nonstatutory obviousness-type double patenting is respectfully traversed.

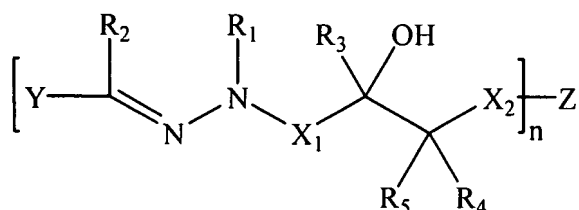
The '453 application includes a base structure (the structure within the brackets when $n=1$) wherein the structure contains only one sulfur atom. Further, the sulfur atom is bonded to a carbon atom of the backbone chain. The sulfur atom is not bonded to an aromatic group or another sulfur atom. Independent claim 23, as amended, requires that if Y includes a sulfur atom, there must be at least two sulfur atoms. Hence, the base structure, if it includes a sulfur atom, must include at least two sulfur atoms. Further, if the "n" value of the formula of the '453 application was assigned so as to match the number of sulfur atoms, then the resultant polymer would contain more numbers of the aromatic group "Y" of the '453 application. Hence, the structures of the polymers would be distinct.

Further, the method of making the polymeric charge transport material described in the '453 application at claim 35 and at paragraph [0085], includes selecting a bridging compound from the group consisting of sodium sulfide with water and thioacetamide. Use of either of these bridging compounds provides only one linking sulfur atom (note the structure of Formula IA and Formula IB at paragraph [0085]). However, claim 28, as amended requires that if the linking group Y_1 or Y_2 contains a sulfur atom then it must contain at least two sulfur atoms. Hence, the structures are distinct and the method of making is distinct. Use of sodium sulfide with water or thioacetamide would not provide the formula or structures of instant claim 28 or the charge transport compositions described in the claims that depend from claim 28. Reconsideration and withdrawal of the rejection of claims 23-35 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over copending application No. 10/883,453 (Published Application No. 2006/0003241) is respectfully requested.

Double Patenting Rejection Over Patent No. 7,118,840

The Examiner rejected claims 23-25 and 27 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 9-13, 17-21 and 26-30 of U.S. Patent No. 7,118,840 ("the '840 patent"). The Examiner asserted that the claims of the '840 patent set forth transport polymers that may comprise sulfur atoms and arylamine groups in the polymeric linkages, especially when n is 4, which appear to overlap with the instantly claimed polymeric charge transport material of claims 23-25 and 27. The rejection of claims 23-25 and 27 on the ground of nonstatutory obviousness-type double patenting is respectfully traversed.

Independent claims 1, 9, 17 and 26 of the '840 patent recite a formula



where n is an integer between 3 and 6. Hence, the Z

bridging group is in common with the branches of the polymer. With an n value of 3-6 inclusive, the polymer forms branches emanating from the Z bridge group. Examples are provided in the '840 patent at columns 15, 16, 17 and 18 (structures 2-4). The structures of the instant application are not branched polymers, but linear polymers. There is no common bridging group to the polymer, regardless of the n value. The polymers are generally formed end-to-end, into a long polymer chain. Hence, the structure of the charge transport materials of the '840 patent are quite distinct from the structures of the charge transport materials of the instant application. Therefore, the charge transport materials do not overlap and are patentably distinct. Reconsideration and withdrawal of the rejection of claims 23-25 and 27 on the ground of

nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 9-13, 17-21 and 26-30 of U.S. Patent No. 7,118,840 are respectfully requested.

Double Patenting Rejection Over Patent No. 6,214,503

The Examiner rejected claims 23-25 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 10, 14, 17, 20, 26, 27, and 30 of U.S. Patent No. 6,214,503 (“the ‘503 patent”). The Examiner asserted that the claims of the ‘503 patent are not patentably distinct because “...both claim a polymeric charge transport polymer, which may be a dimer ($n=2$ in the instant claims) and when $n=0$ in said copending, comprising sulfur atoms and arylamine groups.”

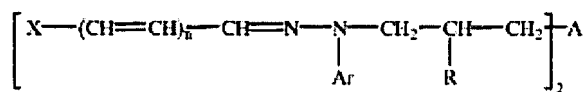
To establish a *prima facie* case of obviousness, “the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved...Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. _____ (2007), 82 U.S.P.Q.2d 1385 (S.Ct. 2007), citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966). In addition, the Supreme Court noted that the teaching, suggestion or motivation to combine test (TSM) may be helpful in determining obviousness. Considerations of the TSM test include some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; reasonable expectation of success; and the prior art reference (or references, when combined) must teach or

suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). MPEP §2142. “There is no necessary inconsistency between the idea underlying the TSM test and the Graham analysis.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. _____ (2007), 82 U.S.P.Q.2d 1385 (S.Ct. 2007). In addition, “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. _____ (2007), 82 U.S.P.Q.2d 1385 (S.Ct. 2007), citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed.2006).

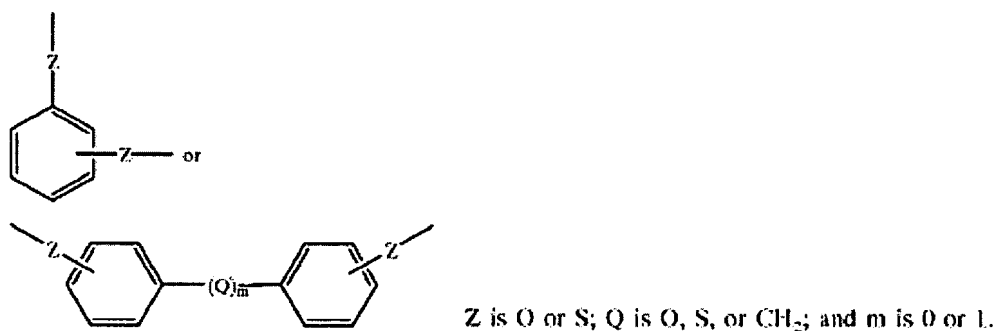
Further, “when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference.” *In re Kotzab*, 55 USPQ2d 1313, 1316-1317, 217 F.3d 1365 (Fed. Cir. 2000). Respectfully, the Examiner has provided no such showing.

The Examiner has failed to establish a *prima facie* case of obviousness. The Examiner has not demonstrated some suggestion or motivation in the references or in the knowledge generally available to one of ordinary skill in the art to modify the reference.

The ‘503 patent sets forth a charge transport material



wherein X is an N-alkyl-substituted carbazole, an N-aryl-substituted carbazole or a p-(N,N disubstituted) arylamine, n can be 0, Ar can be a phenyl group, R can be OH groups and A has either the formula



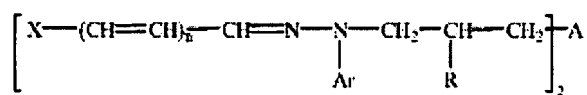
In the formula and structure of the '503 patent shown above, there is one linking group A that bridges the two segments of the charge transport material formula (n can only be 2). The group A can contain up to 2 or 3 sulfur atoms, dependent upon which of the two possible structures of A is selected. The group A only appears once in the polymer chain (n=2) as it bridges the compounds within the brackets of the formula. Further, the charge transport material formula contains only 2 hydrazone groups when n=2.

The formula of independent claim 23 contains 4 hydrazone groups when n=2. Further, the bridging group Y is contained within the brackets of the formula, therefore, when n=2, there are two Y groups in the polymer chain, each at a different location. Although the bridging groups A and Y may each contain at least 2 sulfur atoms, the Y group is repeated in the instant claims, whereas the A group is not repeated. Therefore, the possible polymer structures emanating from the two formulas do not overlap, especially since n must be at least two in the formula (e.g. in claim 23). Hence, the '503 patent does not disclose the charge transport compositions of claim 23, and does not disclose each and every element of claim 23. The structure of the charge transport materials of the '503 patent are quite different from the structures of the charge transport materials of the instant application. Therefore, the charge transport materials do not overlap, are patentably distinct, and are nonobvious. Reconsideration

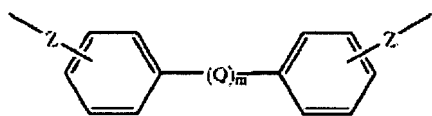
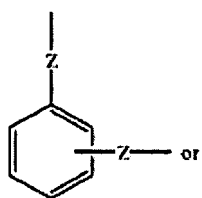
and withdrawal of the rejection of claims 23-25 and 27 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 10, 14, 17, 20, 26, 27, and 30 of U.S. Patent No. 6,214,50 under 35 U.S.C. 102(b) are respectfully requested.

Claim Rejections Under 35 U.S.C. §102(b)

The Examiner rejected claims 23-26 and 28-35 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,214,503 to Gaidelis et al. ("the '503 patent"). The Examiner asserted that the '503 patent sets forth a charge transport material



wherein X is an alkyl-substituted carbazole or an N,N disubstituted arylamine, n is 0, Ar is a phenyl group, R is OH groups and A has either the formula



Z is O or S; Q is O, S, or CH₂; and m is 0 or 1.

The Examiner asserted that it appeared that the formula of instant claim 1 is met, especially when n is at least 2. The Examiner noted that the polymeric material of instant claim 1, although called a polymer by definition encompasses dimers (n=2). The rejection of claims 23-26 under 35 U.S.C. 102(b) is respectfully traversed.

To anticipate a claim, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP §2131.

In the formula and structure of the '503 patent shown above, there is one linking group A that bridges the two segments of the charge transport material formula (n can only be 2). The group A can contain up to 2 or 3 sulfur atoms, dependent upon which of the two possible structures of A is selected. The group A only appears once in the polymer chain (n=2) as it bridges the compounds within the brackets of the formula. Further, the charge transport material formula contains only 2 hydrazone groups when n=2.

The formula of independent claim 23 contains 4 hydrazone groups when n=2. Further, the bridging group Y is contained within the brackets of the formula, therefore, when n=2, there are two Y groups in the polymer chain, each at a different location. Hence, although the bridging groups A and Y may each contain at least 2 sulfur atoms, the Y group is repeated in the instant claims, whereas the A group is not repeated. Hence, the '503 patent does not disclose the charge transport compositions of claim 23. Because each and every element of independent claim 23 is not found in the '503 reference, claim 23 is not anticipated. Claims 24-27 depend from claim 23 and contain all of the elements of claim 23 and are also not anticipated. Reconsideration and withdrawal of the rejection of claims 23-26 under 35 U.S.C. 102(b) are respectfully requested.

Further, the Examiner asserted that instant claims 28-35 are anticipated by the teachings set forth in column 12 in the method of making compound (6). A 1-(2,3-epoxypropyl)-1-phenyl hydrazone of 4-diethylaminobenzaldehyde was used as a starting material for compound (6), which the Examiner asserted anticipates the compound of instant claim 28 where E₁ and E₂ would be reactive epoxy groups, which would be reacted with dihydroxybenzene. Additionally, the Examiner asserted that compounds having reactive thiol groups, such as di-(4-mercaptophenyl)methane can be reacted with the epoxy-hydrazone, and it appears that

applicants' elected species is anticipated. The rejection of claims 28-35 under 35 U.S.C. 102(b) is respectfully traversed.

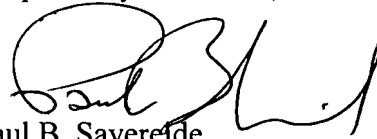
To anticipate a claim, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP §2131.

The material required for the instant charge transport materials of the instant application require a di-reactive ring compound. For example, the material required to make the selected species includes 4-(4-formyldiphenylamino)benzaldehyde bis(N-2,3-epoxypropyl-N-phenylhydrazone). It is noted that a *bis*(N-2,3-epoxypropyl-N-phenylhydrazone) is required to provide the needed reactive sites to prepare the charge transport materials of the specification. As shown in formula (5) of the instant application on page 27, charge transport compositions of the invention may be prepared by a reaction that includes a di-reactive compound. The charge transport materials of the '503 patent require only one epoxy group, only one reactive group for formation of the charge transport materials, not a di-reactive ring compound such as 4-(4-formyldiphenylamino)benzaldehyde bis(N-2,3-epoxypropyl-N-phenylhydrazone). For example, compound (6) of column 12 of the '503 patent is prepared using 1-(2,3-epoxypropyl)-1-phenylhydrazone of 4-diethylaminobenzaldehyde. The description in column 12 of the '503 patent does not describe the use of a di-reactive ring compound. Hence, the '503 patent does not teach or suggest a di-reactive ring structure in the preparation of the charge transport compounds of the '503 patent. Hence, the '503 patent does not describe each and every element of claim 28, therefore claim 28 is not anticipated. Claims 29-35 depend from claim 28 and contain all of the elements of claim 28, and are also not anticipated. Reconsideration and withdrawal of the rejection of claims 28-35 under 35 U.S.C. 102(b) are respectfully requested.

Conclusion

The Examiner is invited to contact the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul B. Savereide", with a stylized flourish at the end.

Paul B. Savereide
Registration No. 36, 914

Customer No. 24113
Patterson, Thunte, Skaar & Christensen, P.A.
4800 IDS Center
80 South 8th Street
Minneapolis, Minnesota 55402-2100
Telephone: (612) 252-1550